Reviewer's report

Title: Conservative treatment in scoliosis and vital capacity evolution Statistical analysis among 321 scoliotic patients treated with CMCR brace. Comparison to a group of 240 scoliotic patients treated with Lyon brace

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Reviewer: Manuel Rigo

Reviewer's report:

I would like to thanks the authors for submitting this paper to scoliosis. They have used a big database and two brace principles, one widely spread and known in several European countries and a second one less know. The principle of this second brace, with mobile pads is very interesting as it tries to prevent the loss of rib mobility suspected to be caused by the lyon brace which uses rigid pads. The question on whether this new brace has less impact on breathing function in comparison with the classical Lyon brace is an interesting question indeed, and it is highly possible that this question could be answered by using the present database. However, the paper here submitted has no a proper design to answer this question. The paper is very confusing mixing breathing function with brace effectiveness. In no case the present paper can answer the raised question. The organization of the paper is not clear, no study design is defined and the authors compare two samples treated differently which are not comparable as they are populations with significantly different Cobb angle, age, etc. Conclusions are not acceptable.

Although I am a clinician, like the authors of the here submitted paper, highly recognized clinicians indeed, and not a pure researcher I would kindly suggest to use a design so called ‘retrospective comparison of two cohorts, looking at the results on breathing function from two different treatments’. They should first define inclusion criteria in order to form two matched populations receiving different treatment (one brace or the other), for example: age (10 to 14 y); sex (female); Cobb angle (25° to 35° - although looking at the indications of both braces most probably the angular value in patients treated with Lyon would be still significantly higher than those treated with the other brace, so may be would be better to use criteria even more restricted, like Cobb angle between 25° and 30°. In any case, it is still possible that, no matter how restrictive is that criteria, the two samples are significantly different on this point, with no possibility for comparison). Exclusion criteria should include previous brace treatment or cast, in order to better analyse the pure action of the compared braces. It is not necessary to report about end results in this paper. This is another question and needs its proper design.

A second candidate design is so called ‘retrospective case-control’, looking at the treatment received in two groups presenting significant different results on FVC. They should use also matched samples involving, at least theoretically, the same
number of subjects.

**Level of interest:** Reject as not of sufficient priority to merit publishing in this journal

**Quality of written English:** Not suitable for publication unless extensively edited

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests’